Studia Mathematica, 190(2): 193-202

Partially Defined σ -derivations on Semisimple Banach Algebras

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Abstract

Abstract: Let A be a semisimple Banach algebra with a linear automorphism σ and let $\delta: I \to A$ be a σ-derivation, where I is an ideal of A. Then $\Phi(\delta)(I \cap \sigma(I)) = 0$, where $\Phi(\delta)$ is the separating space of δ. As a consequence, if I is an essential ideal then the σ-derivation δ is closable. In a prime C^*-algebra, we show that every σ-derivation defined on a nonzero ideal is continuous. Finally, any linear map on a prime semisimple Banach algebra with nontrivial idempotents is continuous if it satisfies the σ-derivation expansion formula on zero products.